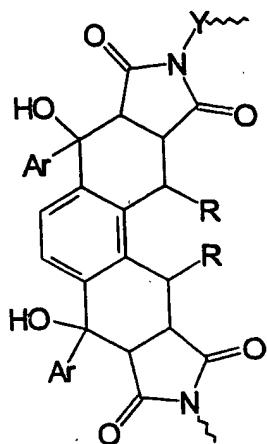


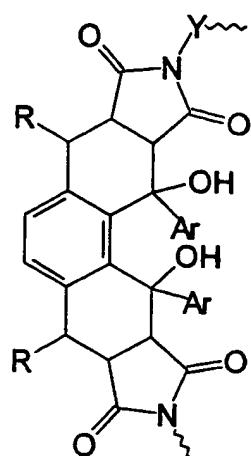
AMENDMENT TO CLAIMS

1. (ORIGINAL) Polyimide having a glass transition temperature (Tg) ranging up to about 300° C, high thermal-oxidative stability and decomposition-stability temperatures as high as 350° C derived from the photochemical cyclopolymerization of approximately stoichiometric amounts of an aromatic ketone and at least one dienophile; said polyimide having a repeating unit of a formula selected from the group consisting of:

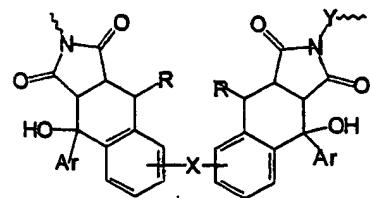
(a)



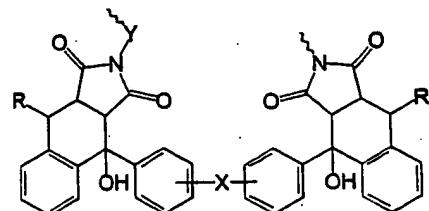
(b)



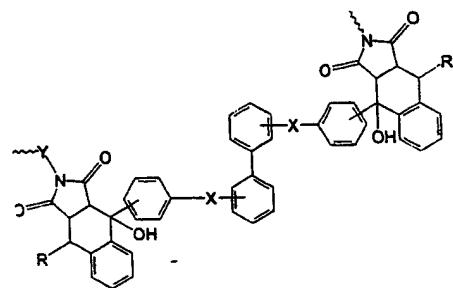
(c)



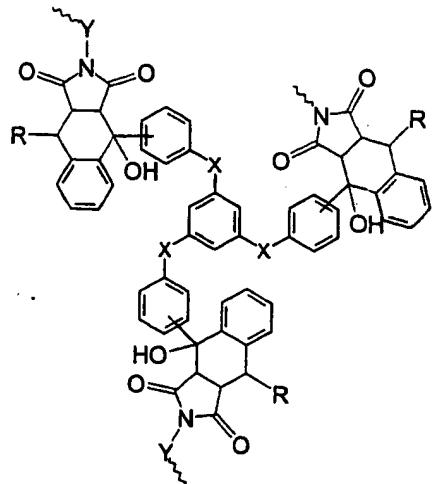
(d)



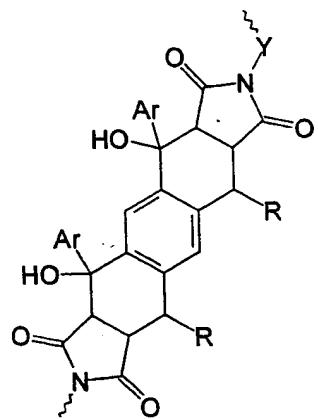
(e)



(f)



(g)

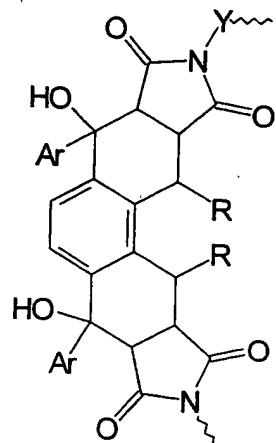


wherein Ar in the repeating unit is the same or a different aromatic or substituted aromatic radical, R is selected from the group consisting of hydrogen, heteroaryl radicals, and lower alkyl radicals of 1 to 8 carbons, X is selected from the group consisting of nil, oxygen, sulfur, -C=O, -CH<sub>2</sub>, alkyl radicals of 1 to 8 carbons, ether radicals, ester radicals, and aryl radicals, and Y is selected from the group consisting of nil, oxygen, -CH<sub>2</sub>, -C=O,

$\text{SO}_2$ , ether radicals, ester radicals, polyether radicals, polyester radicals, aromatic radicals, and alkyl radicals.

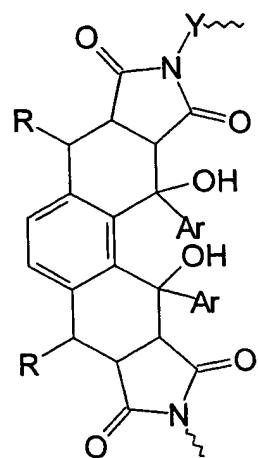
2. (ORIGINAL) The polyimide of Claim 1 wherein the repeating unit has the formula:

(a)

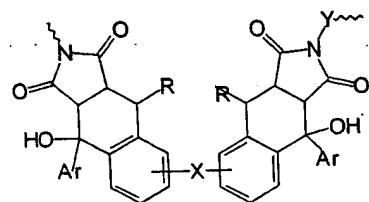


3. (ORIGINAL) The polyimide of Claim 1 wherein the repeating unit has the formula:

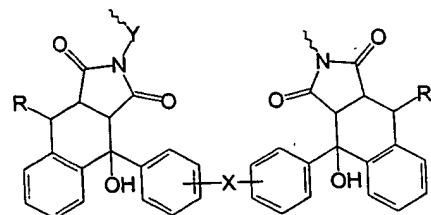
(b)



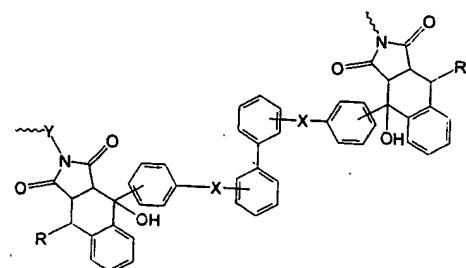
4. (ORIGINAL) The polyimide of Claim 1 wherein the repeating unit has the formula:  
(c)



5. (ORIGINAL) The polyimide of Claim 1 wherein the repeating unit has the formula:  
(d)

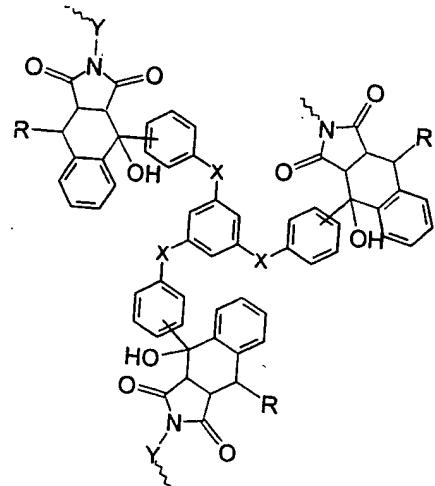


6. (ORIGINAL) The polyimide of Claim 1 wherein the repeating unit has the formula:  
(e)



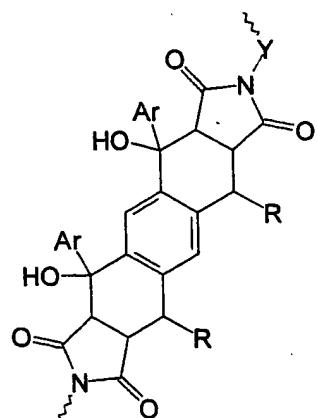
7. (ORIGINAL) The polyimide of Claim 1 wherein the repeating unit has the formula:

(f)

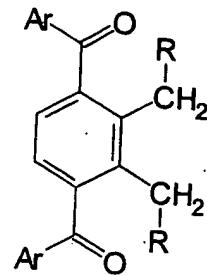


8. (ORIGINAL) The polyimide of Claim 1 wherein the repeating unit has the formula:

(g)

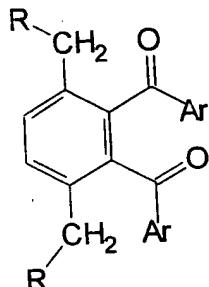


9. (ORIGINAL) The polyimide of Claim 2 wherein the ketone has the formula:



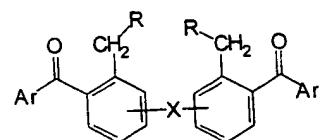
wherein R is hydrogen and Ar is an aromatic radical.

10. (ORIGINAL) The polyimide of Claim 3 wherein the ketone has the formula:



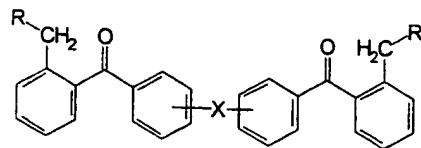
wherein Ar is a substituted aromatic radical and R is a lower alkyl radical of 1-8 carbons.

11. (ORIGINAL) The polyimide of Claim 4 wherein the ketone has the formula:



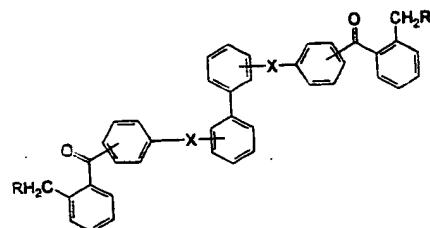
where Ar is an aromatic radical, R is hydrogen and X is  $-\text{CH}_2-$ .

12. (ORIGINAL) The polyimide of Claim 5 wherein the ketone has the formula:



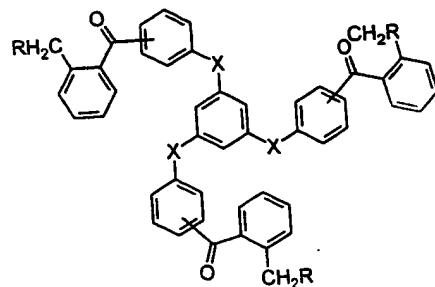
wherein R is hydrogen and X oxygen.

13. (ORIGINAL) The polyimide of Claim 6 wherein the ketone has the formula:



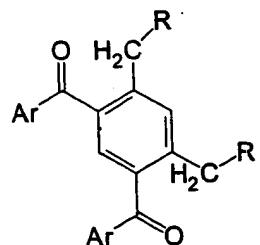
wherein R is hydrogen and X is - $\text{CH}_2$ .

14. (ORIGINAL) The polyimide of Claim 7 wherein the ketone has the formula:



wherein R is an alkyl radical of 1 to 8 carbons and X is -CH<sub>2</sub>.

15. (ORIGINAL) The polyimide of Claim 8 wherein the ketone has the formula:



wherein R is hydrogen and Ar is an aromatic radical.

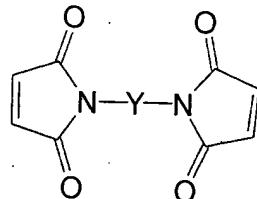
16. (CANCELED).

17. (AMENDED) The polyimide of Claim 21 wherein the dienophile is a bismaleimide.

18. (AMENDED). The polyimide of Claim 21 wherein the dienophile is a trismaleimide.

19. (CANCELED).

20. (AMENDED) The polyimide of Claim 21 wherein the bismaleimide has the formula:



wherein Y is -CH<sub>2</sub>.

21. (NEW) The polyimide of Claim 1 wherein the dienophile is selected from the group consisting of bismaleimides, trismaleimides and mixtures of maleimides with bismaleimides and/or trismaleimides wherein the dienophile is a mixture of 0.0 to 25 molar percent of maleimides with bismaleimides and/or trismaleimides.

22. (NEW) The polyimide of Claim 21 wherein the dienophile is a mixture of maleimides with bismaleimides and/or trismaleimides.